

THE GENUS *EUCATOPS* (COLEOPTERA, CHOLEVIDAE, EUCATOPINAE) - DESCRIPTION OF NEW SPECIES AND SYSTEMATIC REMARKS

Pedro Gnaspini ¹

ABSTRACT

Two new species are described: *Eucatops (Eucatops) obtusus*, from Brazilian Amazonia, and *Eucatops (Sphaerocatops) ovalis*, from Argentina. Male and female genitalia of *Eucatops (Eucatops) formicetorum* (Bruch) are described for the first time. Female spermathecae and the highly modified male genitalia reinforce the hypothesis that Eucatopini and Ptomaphagini should not be considered in the same subfamily, as traditionally used. A key to the species of *Eucatops* is given.

KEYWORDS. Coleoptera, Cholevidae, Eucatopinae, taxonomy, new species.

INTRODUCTION

The genus *Eucatops* Portevin, 1903 has ten described species, recorded to South America. The monotypic tribe Eucatopini is generally grouped with the Ptomaphagini into the subfamily Eucatopinae (JEANNEL, 1936). The characters adopted to consider these tribes in the same subfamily are: 1) presence of a comb of spines on the tibiae; 2) aedeagus without tegmen, parameres directly inserted on the median lobe; 3) internal sac with a strong flagellum. PERREAU (1989) considered as characteristic of Eucatopini and Ptomaphagini one particular type of spermathecae, which he called "type 2". In this type, the spermduct is progressively wider, and its transition with the spermatheca is difficult to ensure.

However, it is premature to consider, without a cladistic analysis, the presence of a comb of spines on the tibiae as an apomorphy to Eucatopini plus Ptomaphagini, since this feature occurs in the same or in different ways in several genera of the Staphylinoidea. On the other hand, the aedeagus of *Eucatops* is too modified. Its features are quite different from the other genera of Cholevidae and polarizations are not easy to ascertain. Hence, reduction of the tegmen in Eucatopini and Ptomaphagini might be homoplasic. This is reinforced by the fact that in Ptomaphagini the basal blade is absent, while in the Eucatopini it is strongly developed.

1. Departamento de Zoologia, Instituto de Biociências, Universidade de São Paulo, Cx. Postal 20520, 01452-990, São Paulo, SP, Brasil.

The Eucatopini and the Ptomaphagini were considered as separate subfamilies only recently (NEWTON & THAYER, 1992).

Two new species of *Eucatops* are herein described; the spermathecae of *E. formicetorum* (Bruch) and *E. obtusus* sp. n. are illustrated, in order to contribute to the knowledge of the genus and to clarify its systematic position.

MATERIAL AND METHOD

The material was deposited in the "Museu de Zoologia da Universidade de São Paulo" (MZSP); "Instituto Nacional de Pesquisas da Amazônia" (INPA), and "Museo Argentino de Ciencias Naturales Bernardino Rivadavia" (MACN).

To dissect the genitalia, the specimens were boiled in water for from five to ten minutes. Some pieces with much adhered matter were maintained for a few minutes in hot KOH at 10%.

Eucatops (Eucatops) obtusus sp. n.

(Figs. 1 - 9)

Holotype, male (MZSP). Type locality and data: BRASIL. Amazonas, WWF-INPA Reserve km 41 (90km NE from Manaus), 05.I.1991, A. Henderson & R. Pardini leg., in inflorescences of *Bactris acanthocarpa* (sample 24b). 1 male and 2 female paratypes (MZSP) and 1 female paratype (INPA) with same data.

Desription. Length: 2.1-2.4 mm; width: 1.1-1.3mm. Winged. Color dark brown. Eyes large. Antennae normal (fig. 4), reaching base of elytra when laid back. Proportions between length of each segment and that of the 1st respectively from 2nd to 11th: 0.8, 0.6, 0.45, 0.45, 0.4, 0.65, 0.25, 0.5, 0.5, 1.0. Proportions between length and width of each segment of the club, from 7th to 11th, respectively: 1.0, 0.45, 0.7, 0.65, 1.35. Pronotum (fig. 1) with shallow punctures closely distributed, not forming strigae, transverse, widest at base, 1.75 times as wide as long; posterior angles acute, posterior margin sinuate. Elytra (fig. 1) regularly rounded, together 1.15 times as long as wide; widest at 1/4 the length from the base; with transverse strigae, densely punctate; apex rounded. Metathoracic wings fully developed. Protibia margins subparallel, protibia slightly wider towards tip, with a comb of spines in the inner margin (fig. 3). Male protarsi (fig. 3) expanded; 1st segment 0.75 times as wide as the maximum width of tibia. Proportions between length and width of each segment, from 1st to 5th, respectively: 1.4, 1.15, 1.4, 1.75, 5.1. Mesotibia curved in both sexes. Metatibia straight in both sexes; male metafemur unarmed. Aedeagus (figs. 5-6) short, subtriangular, apex obtuse with several punctures along the apical margin; basal blade long and subparallel, rounded at base; flagellum strong and somewhat indistinct within several strong accessory pieces. Parameres straight, bearing 13 setae along ventral margin. Genital segment subcylindrical, 1.8 times as long as wide, with several setae in the inner ventral margin (figs. 7-8). Female spermathecae simple, globular (fig. 9).

Etymology. The name is derived from the shape of the aedeagus, which bears a blunt tip, not acute as in the other species.

Remarks. The species is quite different from the others of the subgenus and easily

recognized by the rounded apical margin of elytra (subtruncate in the other species); male protarsi somewhat slender, first four tarsomeres expanded, but not so expanded as in the other species; apex of aedeagus blunt, not acute as in the other species. Besides, it is winged, while the others are wingless.

Eucatops (Eucatops) formicetorum (Bruch, 1918)

(Figs. 10 -16)

Acanthocatops formicetorum BRUCH 1918: 194-195.

Eucatops (Eucatops) formicetorum; JEANNEL 1936: 50, 52.

Material examined. Lectotype male (here designated) (MACN); ARGENTINA. Prov. Cordoba: Alta Gracia, from *Camponotus (Myrmotrix) rufipes* F. nests, C. Bruch leg. 4 males and 2 females paralectotypes, with same data.

This species was described by BRUCH (1918) and revised by JEANNEL (1936). The male genitalia and female spermatheca are described and illustrated herein for the first time.

Description of genitalia. Aedeagus (figs. 10-11) elongate, triangular, dorsal valve with sinuate lateral margins, almost twice as long as the ventral valve; basal blade long and subparallel, with base concavous; flagellum strong and shorter than the basal blade. Parameres flattened and expanded posteriorly, bearing 8-11 small setae on the ventral posterior surface (figs. 12-13). Genital segment (figs. 14-15) subcylindrical, narrowed posteriorly, with several setae in the posterior margin of the lateral lobes; with two pairs of strongly sclerotized carinae - one pair short, dorsally located at posterior half, and one pair long located along ventral inner margin of the lateral lobes, and with an acute projection at the posterior ending; with two lateral flat projections anteriorly. Female spermathecae simple, globular, with a thickening on the wall opposite to the insertion of the duct (fig. 16).

Eucatops (Sphaerocatops) ovalis sp. n.

(Figs. 17 - 23)

Holotype, male (MACN). Type locality and data: ARGENTINA, Loreto, Exp. St., Misiones, Dr. A. Ogloblin leg., from *Pheidole* nest.

Description. Length: 2.4mm; width: 1.7mm. Winged. Convex. Color dark reddish brown. Eyes large. Antennae normal (fig. 19), reaching base of elytra when laid back. Proportions between length of each segment and that of the 1st respectively from 2nd to 11th: 0.85, 0.75, 0.5, 0.55, 0.5, 0.7, 0.4, 0.65, 0.65, 1.5. Proportions between length and width of each segment of the club, from 7th to 11th, respectively: 1.05, 0.45, 0.65, 0.6, 1.5. Pronotum (fig. 17) smooth, brilliant, transverse, widest at base, 2.2 times as wide as long; posterior angles rounded. Elytra (fig. 17) regularly rounded, together as long as wide; widest at 1/6 the length from the base; smooth and brilliant. Head, pronotum and elytra densely covered by long setae, not forming strigae. Protibia margins subparallel, protibia slightly widens towards tip, with a loose comb of spines in the inner margin (fig. 18). Male protarsi (fig. 18) expanded; 1st segment almost as wide as the maximum width

of tibia. Proportions between length and width of each segment, from 1st to 5th, respectively: 1.1, 1.1, 1.5, 1.6, 4.3. Mesotibia curved (fig. 17). Metatibia straight, with apical spur longer than first tarsomere; metafemur unarmed. Aedeagus (fig. 20) triangular, somewhat longer than wide; basal blade long and subparallel, rounded at base; flagellum strong. Parameres straight, bearing 12 setae along ventral margin (fig. 21). Genital segment (figs. 22, 23) trapezoidal in lateral view, subparallel margins in dorsal view slightly narrowing posteriorly; with several setae in the posterior margin of the lateral lobes; with two lateral flat projections anteriorly.

Etymology. The name is derived from the oval body, much more pronounced than in the other species of the subgenus.

Remarks. This species is much smaller than the others of the subgenus and has the metatibial spur longer than first tarsomere, disagreeing with the original description of the subgenus. However, the absence of elytral strigae permits the inclusion of this new species in the subgenus *Sphaerocatops*.

Key to the subgenera and species of *Eucatops* Portevin, 1903.

Modified from JEANNEL's key (1936), to include the species described by SZYMCAKOWSKI (1961, 1963) and the new species. Data on previously described species were gathered from the literature.

1. Elytra with dense punctures aligned and forming strigae (*Eucatops* s. str.) .. 2
Elytra with dense punctures not forming strigae (*Sphaerocatops* Portevin, 1907) 10
- 2 (1). First metatarsomere shorter than second and third together. Metatibia straight in both sexes. (Argentina, Brasil, Peru) 3
First metatarsomere as long as second and third together. Metatibia curved in males. (Bolivia, Peru) 7
- 3 (2). Apical margin of elytra rounded. First protarsomere in males narrower than tibial tip. Length 2.1-2.4mm. (Brasil/Amazonas) *E. (E.) obtusus* sp. n.
Apical margin of elytra subtruncate. First protarsomere in males wider or as wide as tibial tip 4
- 4 (3). Meso- and metatibiae with fine spines along external margin; tibiae not spiny. Brownish brilliant, pubescence rare. Pronotum strongly campaniform, narrower than elytra, which are very thick and very convex. Aedeagus with basal blade well developed, very wide and very long; internal sac shorter than basal blade, flagellum short and strong, accessory pieces strong. Parameres slender, with four setae. Length 3.0mm. (Peru)
..... *E. (E.) oblongus* Portevin, 1903
External margin of all tibiae with strong and erect spines; tibiae spiny. Sides of pronotum rounded, pronotum as wide as elytra 5
- 5 (4). Male metafemora unarmed. Oblong, brown, dull; pubescence long and dense. Aedeagus with basal blade wider at base, internal sac long as basal blade, flagellum very long, flagelliform, accessory pieces strong. Length 2.5mm. (Brasil/Santa Catarina) *E. (E.) inermis* Jeannel, 1936
Male metafemora armed with a long horizontal apophysis, perpendicularly inserted in the median portion of the posterior margin 6
- 6 (5). Femoral apophysis wider at apex and slightly curved inwards. Globular,

brownish brilliant, pubescence long and dense. Elytra not attenuated to apex, which is blunt. Aedeagus with basal blade narrow, internal sac as long as basal blade, flagellum strong but elongate, bent; accessory pieces somewhat développé. Parameres with seven setae at the ventral margin. Length 1.8-2.4mm. (Brasil/Santa Catarina, São Paulo).....

..... *E. (E.) glabricollis* (Reitter, 1884)

Femoral apophysis attenuated at apex and curved outwards. Same general shape as the former species, but with elytra more attenuated at apex. Aedeagus with basal blade narrow and with base concavous. Parameres laminate, with 8-11 small setae at the ventral surface. Genital segment with two pairs of strongly sclerotized carinae. Length 2.5-2.7mm. (Argentina)

..... *E. (E.) formicetorum* (Bruch, 1918)

7 (2). Meso - and metatibiae spiny, spines strong and erect. Metatibial spur longer than first tarsomere 8

Meso - and metatibia not spiny. Metatibial spur not longer than first tarsomere

..... 9

8 (7). Black, pronotum as wide as elytra, strongly campaniform; elytra thick. 8th antennomere as long as wide. Flagellum of internal sac indistinct within strong accessory pieces. Parameres thin, with two long apical setae and four setae on ventral margin. Length 4.0-4.2mm. (Bolivia).....

..... *E. (E.) curvipes* Portevin, 1903 (type species)

Brown, very convex, pronotum campaniform, narrower than elytra. 8th antennomere twice as wide as long. Flagellum of internal sac very slender and long, filiform. Length 3.1mm. (Peru).....

..... *E. (E.) filifer* Szymczakowski, 1961.

9 (7). 8th antennomere twice as wide as long. Aedeagus with internal sac as long as basal blade; flagellum distinct, very long and slender, accessory pieces well developed. Parameres lamellate, bearing 5-6 setae at the ventral margin. Length 2.8mm. (Bolivia).....

..... *E. (E.) rufescens* Portevin, 1903

8th antennomere almost as long as wide. Aedeagus similar to the former but with flagellum thicker and accessory pieces stronger. Length 3.5mm. (Bolivia).....

..... *E. (E.) grouvellei* Portevin, 1903

10 (1). Winged, oval, brilliant. Apical margin of elytra only slightly rounded. Metatibial spur longer than first tarsomere. Length 2.4mm. (Argentina)

..... *E. (S.) ovalis* sp. n.

Wingless. Apical margin of elytra regularly rounded. Metatibial spur shorter than first tarsomere 11

11 (10). Reddish brown brilliant, subglobular. Posterior margin of pronotum sinuate. Elytra very convex. Aedeagus with parameres long, flattened at apex, bearing a dozen of setae at ventral and apical margins. Length 4.0-4.2mm. (Bolivia).....

..... *E. (S.) haemorrhoidalis* Portevin, 1903.

Dark brown, oval. Posterior margin of pronotum not sinuate. Elytra regularly convex. Aedeagus with parameres short and slender, shorter than aedeagus, not flattened at apex, bearing about seven setae at the ventral apical margin. Length 4.2mm. (Brasil/São Paulo).....

..... *E. (S.) brevistylis* Szymczakowski, 1963

Systematic Remarks

Female spermathecae (figs. 9, 16) of *Eucatops* (at least **s. str.**) is simple and globular, which might be considered plesiomorphic. They could not be considered as Perreau's "type 2", because the insertion of the spermduct in the spermatheca is clear.

On the other hand, male genitalia of Eucatopini is apomorphic and strongly modified when compared with other cholevids, as already stated. The shape and structure of the aedeagus, the parameres and the basal blade are quite different from that of Ptomaphagini, and, hence, the absence of a tegmen in both tribes seems to be homoplasic, and should not be used to group these tribes together. Hence, Eucatopini should be considered a separate subfamily from the Ptomaphagini, as in NEWTON & THAYER's (1992) catalog.

The Eucatopinae might be an ancient branch in the Cholevidae phylogeny, which maintained a plesiomorphic female genitalia, while acquired a very modified male genitalia, which is undoubtedly apomorphic. However, only a better knowledge of some groups within the family, specially of the female and male genitalia, would improve the knowledge of its phylogenetic relationships.

Checklist of *Eucatops* species with respective occurrences.

Besides the type-locality, when another locality is given, the reference of the new locality is given between parenthesis.

Eucatops Portevin, 1903

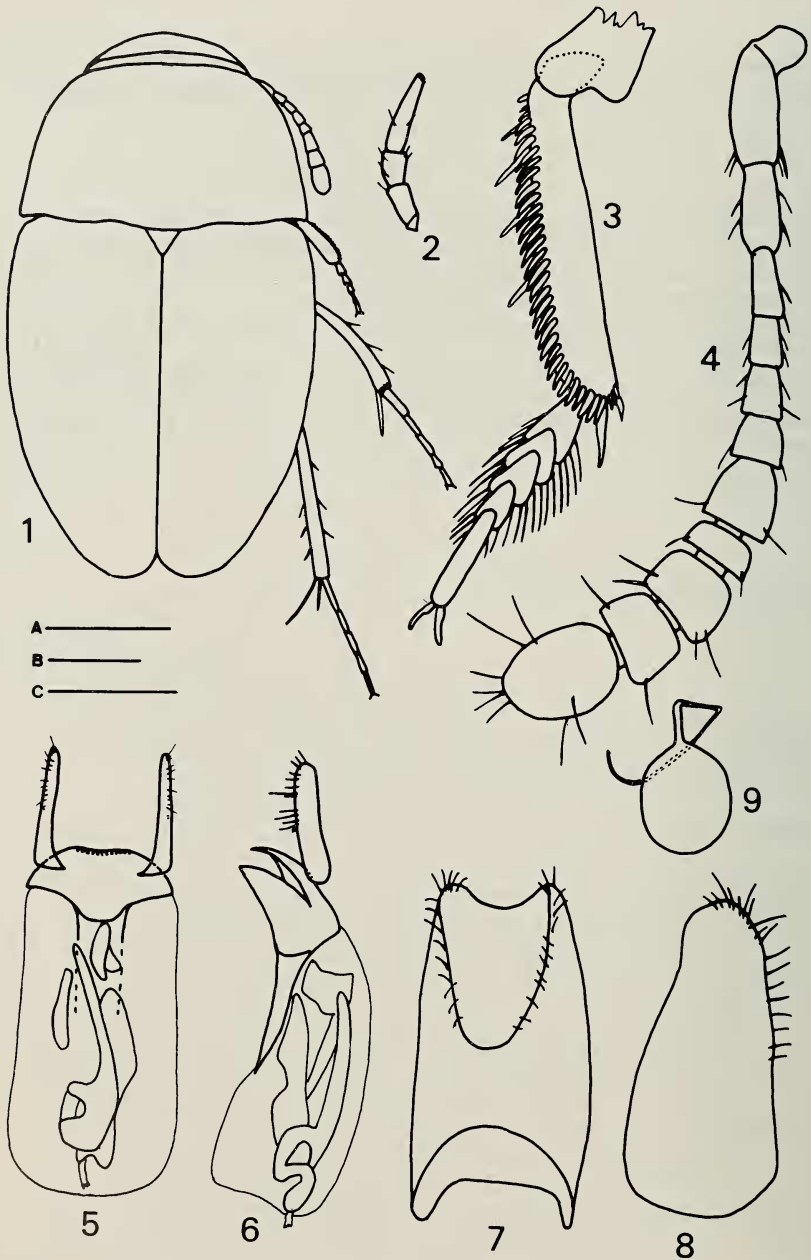
Eucatops (**s. str.**) Portevin, 1903

- E. (E.) curvipes* Portevin, 1903 (type species) - Bolivia: Cochabamba.
- E. (E.) filifer* Szymczakowski, 1961 - Peru: Cuzco: Marcapata. (in the original paper, it was described as *Eocatops (Eocatops) filifer*, clearly a typographical error).
- E. (E.) formicetorum* (Bruch, 1918) (*Acanthocatops*) - Argentina: Cordoba: Alta Gracia.
- E. (E.) glabricollis* (Reitter, 1884) (*Dissochaetus*) - Brasil: Santa Catarina: Blumenau; Brasil (= *E. ater* Portevin, 1903) (JEANNEL, 1936); Brasil: São Paulo: São Paulo (SZYM CZAKOWSKI, 1963).
- E. (E.) grouvellei* Portevin, 1903 - Bolivia: Cochabamba: Cochabamba; Peru: Cuzco: Marcapata.
- E. (E.) inermis* Jeannel, 1936 - Brasil: Santa Catarina: Blumenau.
- E. (E.) oblongus* Portevin, 1903 - Peru: Cuzco: Marcapata.
- E. (E.) obtusus* sp. n. - Brasil: Amazonas: Manaus.
- E. (E.) rufescens* Portevin, 1903 - Bolivia: Cochabamba: Cochabamba.
Sphaerocatops Portevin, 1907 (= *Spathosternum* Portevin, 1903 **non** *Spathosternum* Krauss, 1877 - Orthoptera, Acridiidae)
- E. (S.) brevistylis* Szymczakowski, 1963 - Brasil: São Paulo: São Paulo.
- E. (S.) haemorrhoidalis* Portevin, 1903 (type species) - Bolivia: Cochabamba: Cochabamba.
- E. (S.) ovalis* sp.n. - Argentina : Misiones: Loreto.

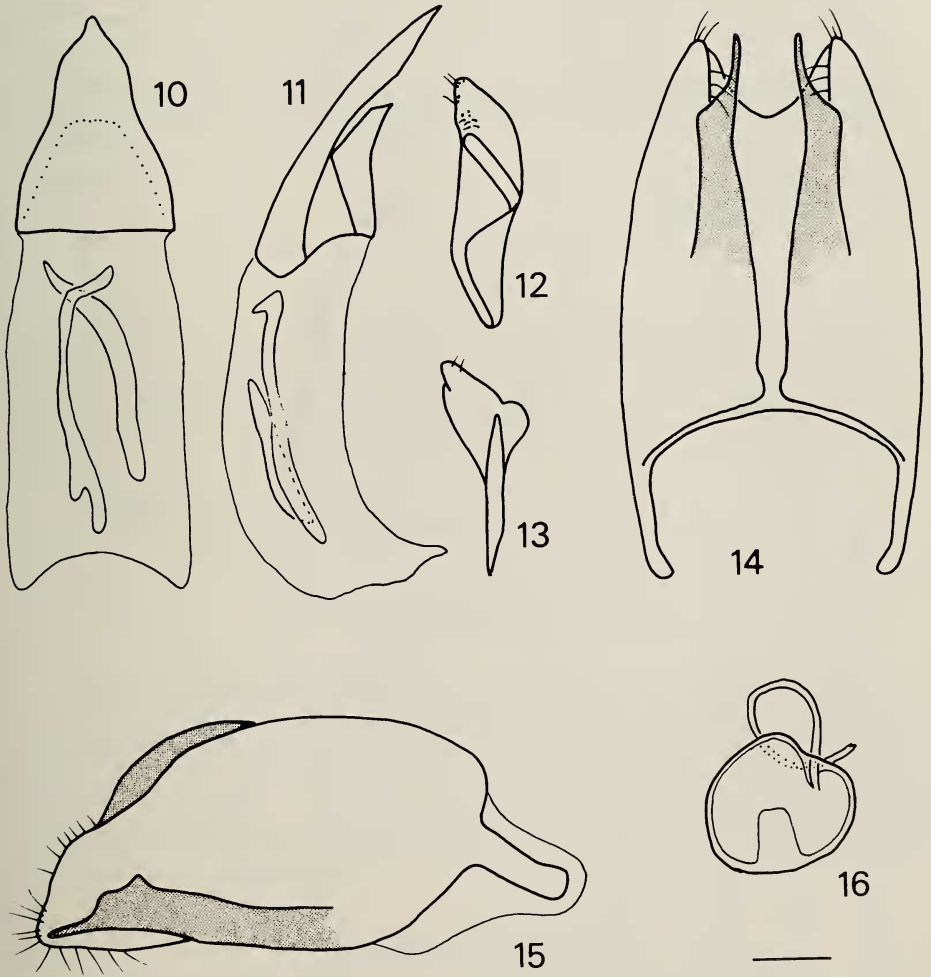
Acknowledgments. To Dr. S.A. Vanin (IBUSP) for the critical review of the manuscript; R. Pardini (IBUSP) and Dr. A.O. Bachman (MACN) for sending me material for study from their collections.

REFERENCES

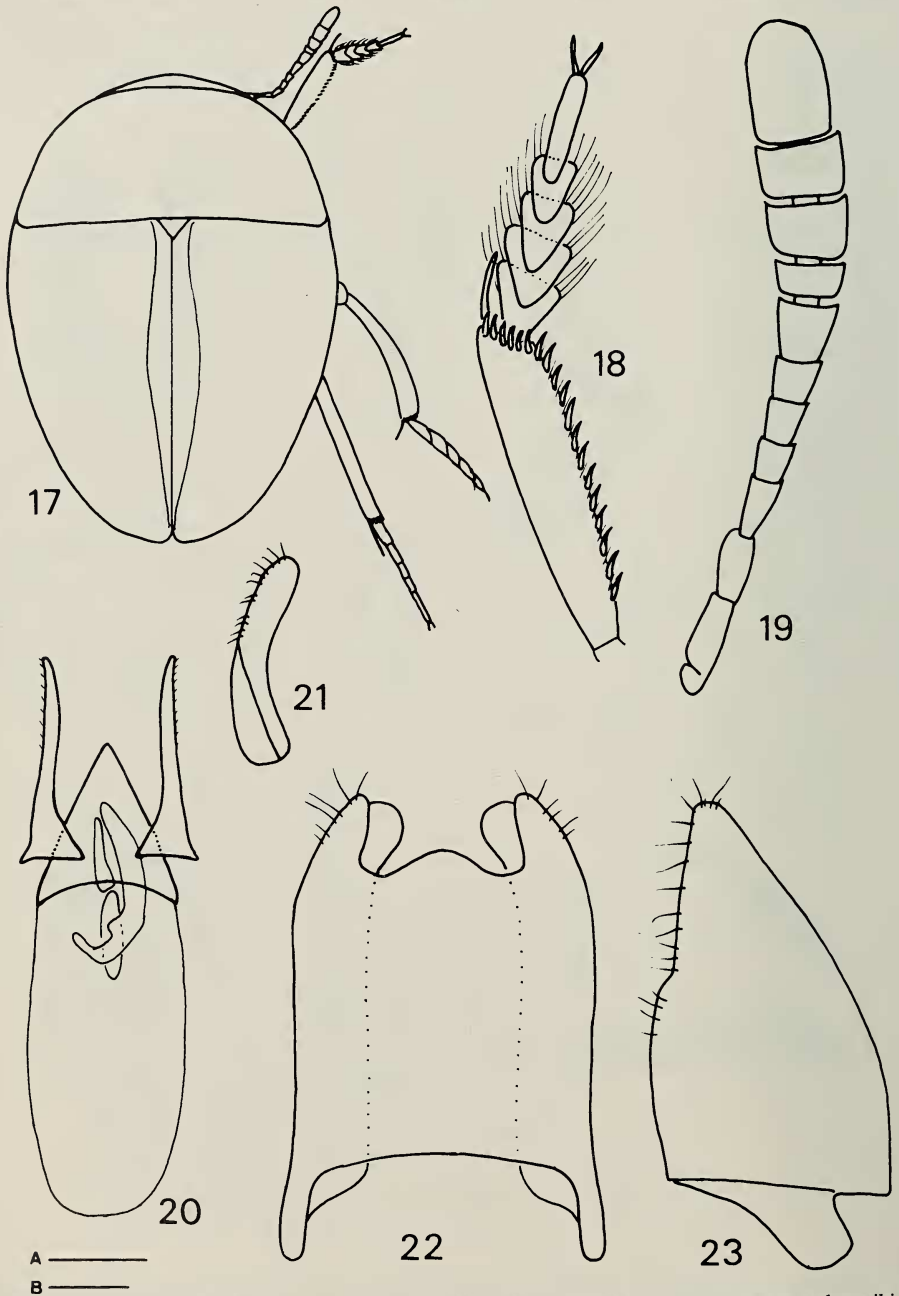
- BRUCH, C. 1918. Nuevos huéspedes de hormigas. **Physis**, Buenos Aires, **4**: 193-195.
- JEANNEL, R. 1936. Monographie des Catopidae. **Mém. Mus. natl. Hist. nat.**, Paris, (n. s.), **1**: 1-438.
- NEWTON, A. F. & THAYER, M. K. 1992. Current classification and family group names in Staphyliniformia (Coleoptera). **Fieldiana (Zoology)**, Chicago, **67**: 1-92.
- PERREAU, M. 1989. De la phylogénie des Cholevidae et des familles apparentées (Coleoptera, Cholevidae). **Arch. Sci.**, Geneve, **39** (3): 579-590.
- SZYMCZAKOWSKI, W. 1961. Especies neotropicales nuevas ou peu connues de la famille Catopidae (Coleoptera). **Pol. Pismo ent.**, Warszawa, **31** (14): 139-163.
- _____. 1963. Catopidae (Coleoptera) récoltés au Brésil par J. Mráz. **Acta ent. Mus. nat. Pragae**, Praha, **35**: 667-680.



Figs. 1 - 9. *Eucatops (Eucatops) obtusus*, 1-8, male. 1, habitus, dorsal view; 2, maxillary palp; 3, protarsus and protibia, dorsal view; 4, antenna; aedeagus: 5, dorsal view, 6, right lateral view; genital segment: 7, ventral view; 8, left lateral view; 9, female, spermatheca. Scale line A 0.5 mm, for fig. 1; scale line B 0.1 mm, for figs 2-8; scale line C 0.1 mm, for fig. 9.



Figs. 10 - 16. *Eucatops (Eucatops) formicetorum*, 10-15, male. 10, aedeagus, dorsal view, 11, same, left lateral view; 12, paramere, dorsal view; 13, same, lateral view; 14, genital segment, ventral view; 15, same, right lateral view; 16, female, spermatheca. Scale line 0.1 mm, for figs 10-15, and 0.05 mm, for fig. 16.



Figs. 17- 23. *Eucatops (Sphaerocatops) ovalis*, male. 17, habitus, dorsal view; 18, protarsus and protibia, dorsal view; 19, antenna; 20, aedeagus, dorsal view, 21, paramere, lateral view; 22, genital segment, dorsal view; 23, same, right lateral view. Scale line A 0.5 mm, for fig. 17; scale line B 0.1 mm, for figs 18-23.